

REMARKS/ARGUMENTS

In the Office Action issued March 26, 2007, claims 18, 20, 21, 23-25, and 27-30 were rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 5,228,854 to Eldridge (“Eldridge”) in view of U.S. Patent No. 5,631,830 to Schroeder (“Schroeder”). Claims 22 and 26 were rejected under 35 U.S.C. §103(a) as being unpatentable over Eldridge in view of Schroeder, and further in view of Phillips (Feedback Control Systems, 3rd ed.) (“Phillips”). Claims 23 and 24 were rejected under 35 U.S.C. §101 as being directed to non-statutory subject matter.

Claims 18 and 20-30 are now pending in this application. The Abstract has been amended as requested by the Examiner. No claim amendments have been made at this time.

The applicant respectfully traverses the rejection of claims 23 and 24 under 35 USC §101. The missile simulator of claim 23 does generate a tangible output, which is the actual value signal that is transmitted to the aircraft weapon system. The aircraft weapon system is a physical piece of hardware and transmitting a generated physical signal to the aircraft weapon system is a tangible output of the missile simulator. In particular, transmitting a generated physical signal to the aircraft weapon system is a practical application of the output of the missile simulator. The aircraft weapons system receives the generated physical signal and makes further practical use of the signal, by generating a signal representing a deviation of the simulated target seeker from a commanded position of the simulated target seeker using the received actual value signal.

The applicant respectfully submits that claims 18, 20, 21, 23-25, and 27-30 are not unpatentable over Eldridge in view of Schroeder. Eldridge relates to a combat training system for use between an attacking aircraft 20 and a target aircraft 30. The attacking aircraft 20 comprises an attacking pod 21 which is fed with ordnance information, such as type of ordnance, initial direction and velocity of a simulated missile or other ordnance fired from the attacking aircraft, and lock-on information from a fire control system of the attacking aircraft 20. The information from the attacking pod 21 is transferred to a target pod 31 of the target aircraft 30 (col. 5, lines 40-47).

The target pod 31 calculates a missile trajectory compatible with the original launch conditions and the target aircraft position history from the time of launch until the missile would have passed a plane of the target aircraft, using a missile model (col. 5, lines 57-66). The simulated missile can be arranged to be partly guided by the radar of the attacking aircraft 20. For these types of ordnance, the attack pod 21 would transmit position and status of the attacking aircraft after launch (col. 6, lines 5-9).

Schroeder discloses a conventional missile control system for use in an actual missile. Schroeder does not disclose or suggest simulation of a missile.

By contrast, claim 18, for example, requires simulating a missile by means of a missile simulator during testing of an aircraft which includes a weapon system for controlling missiles with which the aircraft may be equipped. Eldridge discloses a training system for training between two aircraft, but does not disclose or suggest a testing system for testing an aircraft including a weapon system. Schroeder discloses an actual missile, but does not disclose or suggest simulation of a missile or a missile

simulator. Therefore, the combination of Eldridge and Schroeder does not disclose a missile simulator for use during testing of a single aircraft.

Claim 18 requires receiving the target seeker command position at the weapon system. Neither Eldridge, nor Schroeder, nor the combination of Eldridge and Schroeder discloses or suggests this step. Rather, Eldridge discloses transmitting information to another aircraft.

Claim 18 requires simulating behavior of the missile in a computer model to generate an actual value signal adapted to the weapon system. Neither Eldridge, nor Schroeder, nor the combination of Eldridge and Schroeder discloses or suggests this step. Rather, Eldridge discloses a missile model in a remote location and not in the launching or attacking aircraft. Schroeder discloses an actual missile, not a missile simulation.

Claim 18 requires generating in the weapon system a trouble signal from a deviation between the target seeker command position and the actual value signal, wherein the trouble signal is measured continuously and wherein sampled values for a vector indicating error in amplitude (A) and error in phase angle (ϕ), which represent a difference between a vector SC corresponding to the target seeker command position and a vector SO corresponding to the actual value signal, are determined and sent to the computer model in the missile simulator, and wherein the values for A and ϕ are determined by correlating measured results with known desired results. Eldridge does not disclose or suggest this step or any similar signal that is generated using the required inputs. Schroeder discloses generating signals within the missile to control the missile, but does not disclose or suggest generating any signals in the aircraft weapon system, as

is required by the present invention. These signals generated by Schroeder are used to control the actual missile, not to generate inputs to a missile simulation.

Claim 18 requires using the trouble signal as a control signal for the simulated target seeker. Eldridge does not disclose or suggest this step since Eldridge does not disclose or suggest a trouble signal or any similar signal that is generated using the required inputs. Likewise, Eldridge does not disclose or suggest a control signal or any similar signal that is generated using the required inputs. Schroeder discloses generating signals within the missile to control the missile, but does not disclose or suggest generating any signals in the aircraft weapon system, as is required by the present invention. These signals generated by Schroeder are used to control the actual missile, not to generate inputs to a missile simulation.

Claim 18 requires repeating the steps of simulating behavior of the missile, generating the trouble signal, and using the trouble signal as a control signal for the simulated target seeker. To the contrary, Eldridge discloses performing calculations only once, at a specific time, that is, at a time after a potential hit in the target, calculating a missile trajectory compatible with original launch conditions and the target aircraft position history from the time of launch until the missile would have passed the target.

Thus, even if Eldridge and Schroeder were combined, the result would still not have a missile simulation controlled by a target seeker that is used for testing of an aircraft. The missile of Eldridge does not have a target seeker and the aircraft from which it is launched does not comprise a model of the missile controlled by a target seeker. Likewise, Schroeder does not include a missile simulation. Thus, the behavior of the missile can not be simulated from the launching (attacking) aircraft. Therefore, even

if Eldridge and Schroeder were combined, the result cannot be used for testing of an aircraft weapon system, as is required, for example, by claim 18.

Likewise, as for claim 18, claims 23 and 27 require a missile simulator connected to an aircraft weapon system, which provides the capability to test the aircraft weapon system using only a single aircraft and without using an actual missile.

Thus, the combination of Eldridge and Schroeder still does not disclose these required elements of claims 18, 23, and 27. Therefore, claims 18, 23, and 27, and claims 20, 21, 24-25, and 28-30, which depend therefrom, are not obvious over Eldridge in view of Schroeder.

The applicant respectfully submits that the present invention, according to claim 22 and 26, is not unpatentable over Eldridge in view of Schroeder, and further in view of Phillips. Phillips teaches a method of modeling a feedback control system comprising time discrete signals, but makes no mention of techniques used in the positioning of target seekers. Phillips does not disclose or suggest generating a target seeker command position for a simulated target seeker, simulating behavior of the missile in a computer model to generate an actual value signal adapted to the weapon system, using the trouble signal as a control signal for the simulated target seeker, etc.

Thus, the combination of Eldridge, Schroeder, and Phillips still does not disclose these required elements of the present invention. Therefore claims 22 and 26, which depend from claims 18 and 23, respectively, are not obvious over Watson in view of Batchman and further in view of Phillips.

Each of the claims now pending in this application is believed to be in condition for allowance. Accordingly, favorable reconsideration of this case and early issuance of the Notice of Allowance are respectfully requested.

Additional Fees:

The Commissioner is hereby authorized to charge any insufficient fees or credit any overpayment associated with this application to Deposit Account No. 50-4047 (25880.0039).

Conclusion

In view of the foregoing, all of the Examiner's rejections to the claims are believed to be overcome. The Applicants respectfully request reconsideration and issuance of a Notice of Allowance for all the claims remaining in the application. Should the Examiner feel further communication would facilitate prosecution, he is urged to call the undersigned at the phone number provided below.

Respectfully Submitted,



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